NOTES AND RECORDS OF OHIO DRAGONFLIES AND DAMSELFLIES (ODONATA)†

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During the months from June to September of 1959, I was privileged to pursue a field research program on the distribution and ecology of the Odonata of Ohio. Collections were made in 68 of the state's 88 counties, with emphasis upon those counties less investigated by previous workers. In all, some 154 habitat sites were investigated. The number of sites per county averaged two, with a range of from one (24 counties) to six (2 counties). The program was designed to be broad in scope and to include as many areas as possible. Such a technique precluded concentrated effort in any one area, or even in any specific habitat. Habitat selection was dictated primarily by convenience, accessibility and, in some instances, pure happenstance. Using privately owned property involves the requesting of permission, a procedure that is often time consuming. Hence, attention was directed to those waters on state owned or state controlled land. Further, those lands with campsites were favored. Weekly collecting trips were planned so that a circuitous route would include a number of counties and, if at all possible, no backtracking over already investigated areas. Longer stretches of travel were reserved for early morning, late afternoon or evening, thus permitting the maximum number of hours for fieldwork during the late morning and afternoon when Odonata are most active. Unfortunately it was not possible to revisit areas during different parts of the season to investigate seasonal variance. Seasonal differences were nevertheless apparent, with certain species replacing others as the season progressed. Further, the month of August brought on a rather detrimental heat wave and an associated dry period. The extremely high daytime temperatures noticeably affected the activity of these insects. Lack of rainfall caused most marshy habitats to dry up. Some of these had not been without water during two previous seasons of collecting. As an example, "Specht Bog" of Carroll County was visited in early September. At this time the only water present was a drainage ditch reduced to sluggish pools. Farm ponds were likewise affected, even the larger ones showing a two-foot drop in water level.

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Previous seasonal work had concentrated upon standing-water habitats. Therefore, extra effort was devoted to stream environments. This effort was to some extent less fruitful than anticipated. Except in a few situations, investigations of lotic habitats were little rewarding. Though inexperienced, I would like to venture a hypothesis that the very widespread spring floods of 1959 perhaps so disrupted these habitats that the odonatan fauna was reduced.

A summation of the season's collecting will be made upon the basis of county records, a county record implying the collection of a species one or more times at one or more sites within a county. Tabulation was not made of the number of specimens collected or the number of times a species was collected within a county. Utilizing these criteria, 911 county records were made, 418 of which were dragonflies (Suborder Anisoptera) and 493 damselflies (Suborder Zygoptera). Of these records, 597 (279 Anisoptera and 320 Zygoptera) records are new county records, and two new state records. In addition, the summation will include

TABLE 1

Average and mean number of county records reported per species

	Anisoptera		Zygoptera		Total	
	Average	Mean	Average	Mean	Average	Mean
Total to 1960	10.3	6	17.8	13	14.0	7
Total including this summation	15	6	24.6	17	18.3	8

TABLE 2

Average number of counties reported for common (top 20%) and rare (bottom 20%) species

	Anisoptera		Zygoptera		Total	
	Common	Rare	Common	Rare	Common	Rare
Total to 1960	38.3	1.3	44.5	2.0	40.4	1.5
Total including this summation	51.0	1.4	64.9	1.8	55.8	1.5

records of Zygoptera collected during the summers of 1957 and 1958. This latter material consists of 73 county records of which 42 are not represented in the material collected during 1959. These have yielded 29 new county records. In the following summation all such records are followed by a dagger (†). Also, specimens collected by Eugene S. Morton (E.S.M.) and Timothy J. Morton (T.J.M.) at Rocky River, Cuyahoga County, included two new county records. These are indicated by the appropriate initials.

Published records for Ohio indicate a total of 145 species represented by 2002 county records (1140 Anisoptera and 862 Zygoptera). The data reported here increase this total to 2630 county records (1419 Anisoptera and 1211 Zygoptera), representing an increase of 31.3 percent over previously published records. This increase affects primarily those species that may be classified as "common." The following charts clearly show that only the average number of counties per species has been affected, the mean number has been little changed. When one compares the species comprising the most common 20 percent with the 20 percent least often reported, it is apparent that many of these lesser reported species are either

extremely local in distribution or are adventitious species that only occasionally invade Ohio from neighboring ranges. Of the 18 species reported only once, 5 are reported by Homer F. Price. It is not surprising that this excellent field worker would report rare or elusive species, particularly those species frequenting larger streams. Twelve of the eighteen species have not been reported since Borror's summation in 1937.

The following records are all based upon collected specimens, sightings are not recorded in this summation. On this basis, actual collections are interpreted as superceding previously published records of sightings. Such new records are indicated by means of an asterisk (*). All specimens were identified by myself, and some identifications corroborated by Dr. Donald Borror of Ohio State University. The specimens are in my collection. The number used for each species, unless otherwise indicated, corresponds to that assigned or utilized by Borror (1937), Borror (1938), and Kormondy (1956).

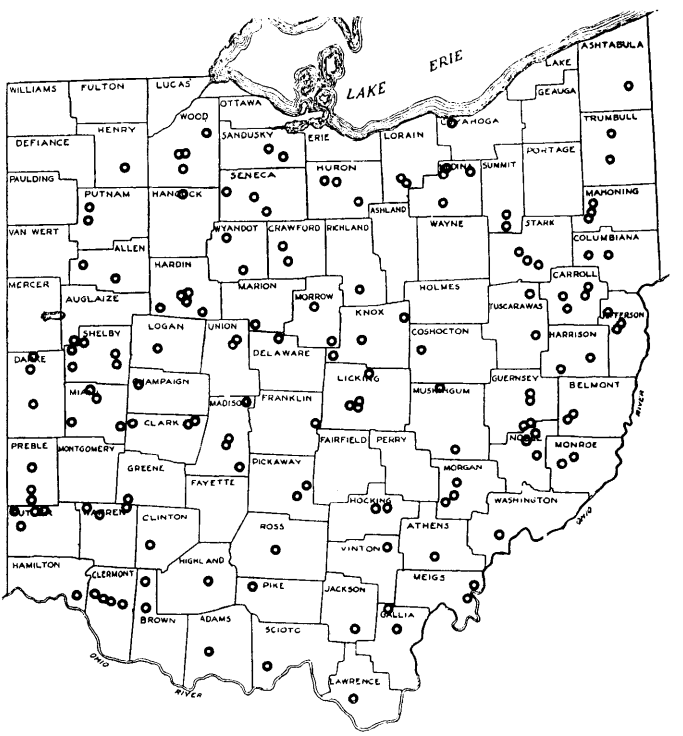

FIGURE 1. Distribution of habitats at which Odonata were collected. Summer, 1959.

ASSIGNMENT OF NUMBERS TO OHIO SPECIES

In order to assign a species number to the included new addition to the Ohio list, it was necessary to review those numbers previously assigned. Borror (1937, 1938) assigned a total of 129 numbers in his original list and its supplement. In 1939 Wright reported the unique occurrence of *Argia fumipennis* Burmeister but did not assign it a number. Borror and Epstein (1942) note this, and list an overlooked record by Langlois (1932). They further assigned number 132 to

Dorocordulia libera (Selys). This assignment is interpreted by me to imply that number 130 should be considered assigned to *Argia fumipennis* Burmeister as reported by Wright 1939 and number 131 to *Coryphaeschna* sp. (probably *igens* Rambur) as reported byLanglois (1932). The following year Montgomery (1943) assigned number 133 to *Somatochlora linearis* Hagen. In 1950 Price brought the list to 138 species by the addition of five new records. Kormondy (1956) added a new record, assigning it number 139 and Price (1958) utilized the numbers 140 to 144 for five new records he recorded. However, the paper of Chamberlain and Whiting (1955) had apparently been overlooked. In it the authors record *Helocordulia uhleri* (Selys) from Hocking County, noting it to be the 139th species recorded from Ohio. It therefore seems advisable to assign the number 145 to *H. uhleri* at this time rather than to rearrange already assigned numbers. This then calls for the assignment of the number 146 to *Argia translata* Hagen reported below. One other change is suggested at this time. Borror (1937) assigned the number 92 to *Lestes disjunctus* Selys. However, Walker (1952) separated this species into two subspecies, both of which he notes (Walker, 1953) as occurring in Ohio. Price (1958) records *Lestes disjunctus australis* Walker as occurring in Ohio, and utilized the number 92. I here propose that the number 92 be reserved for *Lestes disjunctus, sensu lato* as utilized in older reports and to separate the subspecific designations as 92a *Lestes disjunctus australis* Walker and 92b *Lestes disjunctus disjunctus* Selys.

LIST OF NEW COUNTY RECORDS

9 *Gomphus exilis* Selys 1854.—**Harrison, Jefferson, Meigs, Muskingum.**

19 *Gomphus spiniceps* (Walsh) 1862.—**Shelby.**

This record is based upon one specimen taken as it patrolled an area of relatively smooth water between two sets of riffles in the Miami River at Port Jefferson, O.

22 *Gomphus villosipes* Selys 1854.—**Harrison, Licking.**

24 *Dromogomphus spinosus* Selys 1854.—**Clermont, Harrison, Jefferson, Morgan, Vinton.**

A female of this species was taken at Burr Oak Lake, Morgan County, with prey that appears to have been a teneral female of *Pachydiplax longipennis*.

26 *Lanthus albistylus* (Hagen) 1878.—**Jefferson.**

This species was last reported by Borror (1937) in which three central counties are recorded. Two males of this elusive little species were taken as they rested in the morning sunlight on small stones protruding from the shaded rocky stream below Lake Jefferson's dam. Their capture proved rather difficult. This collection also represents a new seasonal distribution. Borror (1937) gives the extreme dates as June 3 to June 17; this collection was made on **July 1.**

30 *Boyeria vinosa* (Say) 1839.—**Carroll.**

31 *Anax junius* (Drury) 1770.—**Adams, Gallia, Guernsey, Harrison, Huron, Jefferson, Madison, Mahoning, Medina, Meigs, Monroe, Morgan, Stark, Tuscarawas, Vinton*, Warren.**

32 *Anax longipes* Hagen 1861.—**Jefferson.**

The four previous reports of collection and three of sightings of this beautiful, exasperating species reflect its evasive powers rather than its great rarity. Never a common species, it nevertheless must be more common than these records indicate. I have spent many hours pursuing it in several areas, but was unsuccessful in all but this one case. This collection was achieved, not by skill, but by utilizing a 22 cal. rifle loaded with dust shot. This specimen was taken at a small, muddy, silt-bottomed pond in a strip-mine area. Another specimen was observed over a very similar pond high on a hill in Hocking County.

36 *Aeschna constricta* Say 1839.—**Carroll.**

38 *Aeshna umbrosa* Walker 1908.—**Carroll, Licking.**

In all cases of these collections the specimens were males taken as they cruised over small, shallow streams. The streams tended to be shaded, at least in part. The bottoms of these streams, however, varied from mud to gravel.

39 *Aeshna verticalis* Hagen 1861.—**Vinton.**

This collection was made from swarms of males at the headwaters of Lake Hope. They were taken for several hundreds of yards up the stream feeding into the lake as well as along the shore of its shallow upper end. This collection also constitutes a change in seasonal distribution from that reported by Price, 1950 (August 9) and Borror and Epstein, 1942 (October 6), these collections having been made on **August 5** and **6.**

139 *Macromia alleghaniensis* Williamson 1909.—**Scioto.**

Kormondy (1956) first reported this as a state record for Ohio from two males taken by the late Dr. Clarence H. Kennedy at Put-In-Bay on Lake Erie in 1934. In this report Kormondy notes that the only other record this side of the Allegheny Mountains is one from Kentucky. Thus, a record from southern Ohio is not too surprising. The collection consists of a single male taken at Roosevelt Lake. It was taken during the afternoon as it patrolled the headwater stream of the lake. The stream at this point was heavily shaded in parts, and the specimen seemingly established its path outside of these shaded areas. Kennedy's specimens bore no dates, hence the only seasonal data available are that of this specimen, **August 12.**

44 *Macromia illinoiensis* Walsh 1862.—**Medina** (T.J.M.).

This record is based upon a single male captured by Timothy J. Morton as it flew over the West Branch of the Rocky River in Medina County where it crosses Route 252. The river at this point has its typical sheet-rock bottom. The specimen did not have an apparent course but rather seemed to cruise the stream for some distance. It may be, of course, that we saw more than one specimen, but some time was spent and only this single male taken. After its capture no other was seen.

46 *Didymops transversa* (Say) 1839.—**Jefferson.**

This specimen was taken as it rested upon vegetation along the bank of the small shaded stream below the dam of Lake Jefferson. Borror (1937) gives the seasonal distribution as April 25 to June 6, therefore this record constitutes an extension for it was taken on **July 1.**

49 *Epicordulia princeps* (Hagen) 1861.—**Adams, Athens, Belmont, Brown, Champaign, Clark, Columbiana, Darke, Guernsey, Harrison, Jefferson, Lorain, Madison, Medina, Meigs, Miami, Monroe, Morgan, Muskingum, Noble, Pike, Summit, Tuscarawas, Warren, Washington.**

These records more than double those previously published for this species, it now having been collected in half of the counties. This is a common species in nature, if not in collections. Males are usually seen cruising a territory of some 20 to 30 yards in length over the water 10 to 15 feet from shore. They may, however, patrol a terrestrial domain while feeding. This species is very responsive to any movement within its sight range. If, as it flies by, one flips a pebble or any small object that will fall within sight, the adult will swiftly alter its flight to investigate this moving object. I have frequently utilized this habit to entice a specimen within reach of my net. Borror's (1937) extreme dates of June 2 to September 14 are slightly extended by a specimen collected at Granville, Licking County, on **May 28.**

50 *Tetragoneuria cynosura* (Say) 1839.—**Harrison, Jefferson, Morgan.**

53 *Nannothemis bella* Uhler 1857.—**Miami.**

This is the second collection of this dainty little species in the state, the other reported by Borror (1930) from Cedar Swamp in Champaign County. The above report is based on a collection of 10 males and 5 females taken at Silver Lake in Miami County on July 16. This small glacial-remnant lake is now a recreation area for the residents of New Carlisle, which is just across the Champaign County line to the west. The habitat and habits reported by Borror (1930) are affirmed by this collection. The complete, exhaustive survey of this small lake accentuated the fact that adults of this species are found only in low grass and then only if there is water beneath it. In one location the water was merely a thin film of seepage water, but the adults seemed bound to the area thusly defined.

54 **Perithemis tenera** (Say) 1839.—**Adams, Brown, Champaign, Clermont*, Clinton, Columbiana, Gallia, Guernsey, Hancock, Jefferson, Lorain, Medina, Meigs, Miami, Monroe, Morgan, Noble, Shelby*, Stark, Summit, Warren.**

55 *Celithemis elisa* (Hagen) 1861.—**Adams, Belmont, Gallia, Guernsey, Hardin, Henry, Huron, Meigs, Miami, Monroe, Morgan, Muskingum, Stark, Warren.**

The seasonal distribution of the species has been listed as June 6 (Borror, 1937) to August 21 (Borror, 1938). Specimens collected at Granville, Licking County, on **May 24** and May 31 extend the earlier date while the later date is extended by specimens collected at Fitchville, Huron County, on August 26 and at Springboro, Warren County, on **September 2.**

56 **Celithemis eponina** (Drury) 1773.—**Adams, Athens, Brown, Clermont*, Columbiana, Guernsey, Hamilton, Hocking, Lorain, Madison, Morgan, Scioto, Summit, Warren, Wyandot.**

The seasonal range of this species is given as June 13 (Borror, 1937) to August 21 (Borror, 1938). Collections at the Spring Valley Wildlife Area near Mt. Holly and at Springboro, both in Warren County, were made on **September 2.**

62 *Libellula cyanea* Fabricius 1775.—**Adams, Gallia, Hocking, Meigs, Monroe, Muskingum.**

These records extend the distribution of this species to 15 counties. Except for two counties, Defiance and Williams, reported by Price, the distribution of this species appears to concentrate in the southeastern unglaciated portions of the state. Further collections of this species may alter this impression. The species is nowhere widely distributed. Rather, it occurs in small numbers, generally associated with beds of cattails.

63 *Libellula incesta* Hagen 1861.—**Summit.**

In addition to the above Ohio record, this species was collected in northeastern Pennsylvania. Both habitats had extensive beds of emergent vegetation and in both cases the adults occurred only along the outer edges of those beds. Only during pursuit did they venture shoreward.

64 *Libellula luctuosa* Burmeister 1839.—**Adams, Brown, Carroll, Columbiana, Gallia, Guernsey, Hamilton, Harrison, Jefferson, Lorain, Medina, Meigs, Miami*, Monroe, Morgan, Noble, Shelby, Stark*, Tuscarawas, Warren, Washington.**

A male of this ubiquitous species was taken while flying in tandem with a female of *Libellula pulchella*.

66 *Libellula pulchella* Drury 1770.—**Adams*, Brown, Columbiana, Gallia, Guernsey, Harrison, Jefferson, Mahoning*, Meigs, Miami, Monroe, Morgan, Noble, Tuscarawas, Warren.**

68 *Libellula semifasciata* Burmeister 1839.—**Licking, Stark, Trumbull, Tuscarawas.**

My first contact with this species occurred at a small meadow slough on State Route 314 just north of the Morrow-Knox County line. While spending an unsuccessful hour in pursuit, ample opportunity for study was afforded. Unlike most Anisoptera, this species gives the appearance of being almost communal while in flight. At this site a stiff breeze was blowing across the pond and the males were hovering over the vegetation on the lee side, headed into the wind. Usually they hovered in pairs or small groups. One group was made up of six specimens. And, almost like fish in a school, when one moved to a new spot, the others followed, remaining in formation. Similar behavior was subsequently observed at a swampy meadow near Granville, Licking County. This behavior seemed to be in response to a stiff wind for when the air was still only a few were in flight. Rather, they rested amidst the vegetation, most frequently six to ten in. above the water surface, thus below the top of the emergent vegetation. They most frequently chose a slanting or near horizontal perch. Other specimens were found in cattail marshes, fields some distance from water, and even in deep, damp woods.

(65) *Plathemis lydia* (Drury) 1770.—**Brown, Clermont, Gallia*, Guernsey*, Hamilton, Harrison, Jefferson, Lorain, Madison, Medina, Meigs, Miami, Monroe, Morgan, Noble, Scioto, Tuscarawas, Warren.**

This species is apparently an important pioneer species for it and *Libellula pulchella* are the commonest dragonflies found in the vicinity of newly formed waters, even those of a temporary nature. They seem to be attracted more to muddied water than to clear, matured waters. In the College Pond of Denison University, they most commonly patrol the area stirred up by inrushing surface run-off. The reported seasonal distribution of May 13 (Borror, 1937) to September 18 (Price, 1950) is extended by an almost teneral female taken at Atwood Reservoir, Delroy, Carroll County, on **September 24.**

72 *Sympetrum obtrusum* (Hagen) 1867.—**Muskingum, Summit.**

73 *Sympetrum rubicundulum* (Say) 1839.—**Brown, Carroll, Darke, Greene, Madison, Mahoning, Medina, Miami, Noble, Seneca, Trumbull, Tuscarawas, Warren, Wood.**

74 *Sympetrum semicinctum* (Say) 1839.—**Carroll, Miami.**

76 *Sympetrum vicinum* (Hagen) 1861.—**Carroll, Delaware, Greene, Lorain, Medina, Miami, Preble, Shelby, Summit, Tuscarawas, Union, Warren.**

77 *Leucorrhinia intacta* (Hagen) 1861.—**Ashtabula, Harrison, Jefferson, Knox, Morrow, Trumbull.**

This perky little spring Libellulid is a common pond and swamp inhabitant. It often rests upon floating vegetation. When a male and female couple, they seemingly seek shelter, flying into nearby vegetation where they rest, usually on a horizontal perch, and complete copulation. Such pairs are often surrounded by a swarm of males eager to interrupt. On one occasion three were found in a row resting on a floating mat of algae. The anterior male was coupled to another male which was coupled to a female. A female was observed flying alone over shallow water where it repeatedly touched the surface with the tip of the abdomen, apparently ovipositing. Borror (1937) reports the seasonal distribution of this species as May 9 to August 1. This range is slightly extended by three specimens collected at Sparta, Ohio, Morrow County, on **May 5.**

78 *Pachydiplax longipennis* (Burmeister) 1839.—**Belmont, Brown, Clermont, Columbiana, Gallia, Guernsey, Hamilton, Harrison, Jefferson, Lorain, Madison, Mahoning, Medina, Meigs, Monroe, Morgan, Noble, Summit, Trumbull*, Tuscarawas, Warren.**

79 *Erythemis simplicicollis* (Say) 1839.—**Adams, Athens, Brown, Columbiana, Darke*, Gallia, Guernsey, Hamilton, Harrison, Jefferson, Lorain, Madison, Medina, Meigs, Monroe, Morgan, Warren, Washington.**

Several specimens of this species were taken with prey, one a female with a male of *Perithemis tenera*, and the other a male feeding upon a crescent butterfly (*Phyciodes* sp.). Others were seen with the same prey, observations which confirm that reported for this species by Price (1958).

80 *Pantala flavescens* (Fabricius) 1798.—**Hamilton, Preble.**

81 *Pantala hymenea* (Say) 1839.—**Mahoning, Tuscarawas.**

83 *Tramea lacerata* Hagen 1861.—**Adams, Brown, Clark*, Columbiana, Gallia, Guernsey, Harrison, Jefferson, Lorain, Madison, Medina, Meigs, Miami, Monroe, Morgan, Muskingum, Stark, Summit, Warren.**

87 *Agrion maculatum* Beauvois 1805.—**Allen, Fayette†, Hardin, Harrison, Jefferson, Knox†, Madison, Meigs, Miami, Monroe, Morgan, Muskingum, Noble, Pike, Preble, Richland†, Sandusky, Shelby, Stark.**

88 *Hetaerina americana* (Fabricius) 1788.—**Allen, Butler, Gallia, Huron, Knox, Medina, Miami, Pike, Preble, Richland, Sandusky, Seneca.**

90 *Archilestes grandis* (Rambur) 1842.—**Cuyahoga** (E.S.M.).

This new record is a drastic extension of the range of this species. Previous collections had been made in the southwestern counties of Butler, Montgomery and Preble. The specimen from Cuyahoga County is a female that was collected by Eugene Morton at Rocky River. I made a pilgrimage to Oxford, Butler County, to the area described by Williamson (1931) as the first Ohio locality reported for this species. Several specimens were taken there. The next day, September 3, this striking species was encountered again at Somerville, Butler County. This site, however, differed greatly from commonly reported habitats. Just across Seven Mile Creek from the village was a small (approximately 30 by 40 feet) muddy pond. It was situated at the base of a steep slope, had a gray clay bottom and was apparently fed by surface run-off. It was only some 100 feet from the creek. Considerable time was spent searching the creek bank and bottoms but to no avail. About the pond, however, large numbers were actively flying. They were very busily engaged in flying from perch to perch, coupling and copulating. None were seen to oviposit, however. These adults were rather easy to approach, so easy, that it was possible to photograph several despite lack of special equipment.

92a *Lestes disjunctus australis* Walker 1952.—**Coshocton†, Guernsey, Licking, Morrow, Muskingum†, Tuscarawas, Union†.**

Though Walker (1953) lists Ohio within the range of both subspecies, all specimens I have collected agree with his description of *L. d. australis*. The splitting of this species will require a reestablishment of the geographic and seasonal distributions. The seasonal distribution of this subspecies in Ohio has been given as April 20 (Kormondy, 1956) to June 6 (Price, 1958). The new records reported here range from May 6 to **August 12.**

97 *Lestes dryas* Kirby 1890.—**Licking.**

This single record also constitutes a change in seasonal distribution. Montgomery (1943) gives June 5 as the earliest date and Borror (1937) gives August 1 for the latest date [as *Lestes uncatus*]. Specimens were collected at Granville, Licking County on **May 13.**

95 *Lestes inequalis* Walsh 1862.—**Knox†, Vinton.**

96 *Lestes rectangularis* Say 1839.—**Allen†, Belmont, Columbiana, Crawford†, Darke, Guernsey, Hardin, Huron, Jackson†, Lorain, Madison, Mahoning, Medina, Miami, Pike, Preble†, Richland†, Summit, Union†, Wyandot.**

98 *Lestes unguiculatus* Hagen 1861.—**Crawford†, Marion†, Morrow†, Tuscarawas.**

99 *Lestes vigilax* Hagen 1862.—**Miami, Summit.**

100 *Argia apicalis* (Say) 1839.—**Allen, Carroll, Champaign, Clinton, Coshocton, Darke, Guernsey, Hancock, Harrison, Huron, Knox, Lawrence, Lorain, Madison, Medina, Meigs, Miami, Monroe, Morgan, Noble, Pickaway, Pike, Preble, Seneca, Union†, Wyandot.**

102 *Argia moesta* (Hagen) 1861.—**Allen, Guernsey, Harrison, Jefferson, Medina, Morrow, Sandusky, Seneca, Wood.**

At Fremont, Sandusky County, on August 26 many pairs of this species were seen ovipositing in the riffles of the Sandusky River. Such females showed great preference for plant material that was free floating and had been caught in the riffles. In several instances small, bobbing sticks were covered with enclasped pairs while large, solid pieces of wood were overlooked.

103 *Argia sedula* (Hagen) 1861.—**Darke†, Hardin, Harrison, Huron, Morrow, Muskingum.**

104 *Argia tibialis* (Rambur) 1842.—**Allen, Fayette†, Guernsey, Hardin, Jefferson, Madison, Meigs, Morgan, Noble, Putnam, Shelby, Wood, Wyandot.**

146 *Argia translata* Hagen 1865.—**Harrison, Meigs.**

New State Record. The specimens (3 male and 1 female) collected in Harrison County were taken along the hard stoney shore of Piedmont Reservoir near the spillway. The single male from Meigs County was collected at Forked Run Lake. The seasonal distribution, based on these collections, is **June 30;** (Harrison County) to **July 9** (Meigs County).

105 *Argia violacea* (Hagen) 1861.—**Athens, Columbiana, Crawford, Gallia, Hancock, Hardin, Harrison, Hocking, Jackson, Jefferson, Lawrence, Lorain, Madison, Medina, Meigs, Monroe, Morgan, Muskingum, Pike, Preble†, Richland, Scioto, Seneca, Summit.**

106 *Amphiagrion saucium* (Burmeister) 1839.—**Ashtabula, Mahoning, Miami, Trumbull.**

108 *Nehalennia irene* (Hagen) 1861.—**Mahoning, Miami, Trumbull, Tuscarawas.**

109 *Chromagrion conditum* (Hagen) 1876.—**Madison, Mahoning.**

Borror (1937) gives the seasonal distribution of this species as May 20 to July 12. A single female collected at Big Darby Creek where it crosses the High Free Pike in Madison County extends its seasonal range to **May 5.**

110 *Enallagma antennatum* (Say) 1839.—**Ashtabula, Belmont, Carroll, Champaign, Darke, Jefferson, Madison, Mahoning, Trumbull.**

111 *Enallagma aspersum* (Hagen) 1861.—**Athens, Carroll, Gallia, Guernsey, Jackson, Jefferson, Knox†, Licking, Monroe, Muskingum, Stark, Summit, Tuscarawas, Vinton.**

The seasonal distribution of this species has been reported as May 7 (Borror, 1937) to August 2 (Price, 1958). This seasonal distribution is extended by collections at Lake Hope, Vinton County, on August 5 and at Porter, Gallia County, on **August 6.**

129 *Enallagma basidens* Calvert 1902.—**Adams, Athens, Brown, Carroll, Champaign, Clark, Clinton, Crawford, Cuyahoga** (T.J.M.), **Darke, Franklin, Gallia, Guernsey, Hancock, Harrison, Huron, Licking, Logan, Lorain, Meigs, Miami, Monroe, Morgan, Morrow, Muskingum, Pickaway, Pike, Preble, Scioto, Union, Warren.**

This species was first reported in Ohio by Borror (1938) with records from Clermont and Montgomery Counties. Since that time Montgomery (1943) and Price (1950, 1958) have added records from six northwestern counties. These records little reflect the distribution of this relatively new addition to the Ohio fauna, for it is now apparently widespread throughout the state. In fact, at some habitats it was the most common damselfly. As it further extends its range it may again illustrate the success of invading organisms.

113 *Enallagma carunculatum* Morse 1895.—**Carroll, Columbiana, Medina, Miami.**

114 *Enallagma civile* (Hagen) 1861.—**Adams, Athens, Brown, Carroll, Champaign, Clinton, Columbiana, Crawford, Gallia, Guernsey, Hancock, Hardin, Harrison, Highland, Hocking,**

Huron, Jefferson, Lawrence, Lorain, Madison†, Mahoning, Marion, Medina, Miami, Morrow, Muskingum, Pickaway, Pike, Preble, Scioto†, Shelby, Union†, Vinton, Warren, Wyandot.

115 *Enallagma divagans* Selys 1876.—**Ashtabula, Trumbull.**

118 *Enallagma exsulans* (Hagen) 1861.—**Allen, Champaign, Crawford†, Gallia, Guernsey, Huron, Jefferson, Medina, Meigs, Monroe, Pike, Putnam, Scioto, Seneca, Wyandot.**

119 *Enallagma geminatum* Kellicott 1895.—**Allen†, Clark, Columbiana, Crawford, Greene, Jefferson, Mahoning, Medina, Morrow, Muskingum, Preble, Union, Warren.**

121 *Enallagma signatum* (Hagen) 1861.—**Belmont, Brown, Carroll, Clark, Columbiana, Crawford, Hamilton, Harrison, Hocking†, Jackson, Miami, Morrow, Muskingum, Pike, Preble, Union†, Warren.**

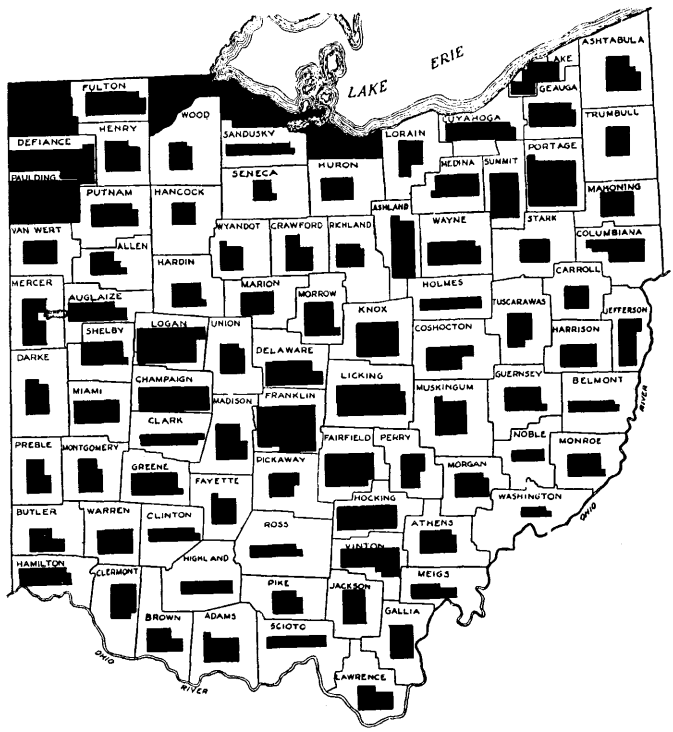

FIGURE 2. Distribution of county records for Odonata reported from Ohio. The total number of records reported for each county are indicated proportionately. Those counties totally blackened may have more records than the available area permits indicating.

This species is mentioned by Howe (1917) as being semicrepuscular. Field observations concur in this for it is rarely active before late afternoon. It is the latest flier of the damselflies, often flying when the light is so weak they can hardly be seen. During mid-day it is found only in heavily shaded situations. Apparently, this is a heliophobic species rather than heliophilic as are most Odonata. Adults when flying skim just above the surface of the water, and when at rest choose floating materials. They are uncommon along the shore.

123 *Enallagma vesperum* Calvert 1919.—**Lawrence.**

124 *Ischnura posita* (Hagen) 1861.—**Adams, Auglaize, Brown, Clark, Darke, Hancock, Hardin, Hocking, Lorain, Medina, Meigs, Miami, Monroe, Morgan, Pike, Sandusky, Scioto, Trumbull, Warren.**

126 *Ischnura verticalis* (Say) 1839.—**Adams, Allen, Athens, Carroll, Crawford, Guernsey, Hamilton, Hardin, Harrison, Highland, Huron, Jefferson, Lawrence, Lorain, Medina, Meigs, Monroe, Morgan, Noble, Preble, Richland, Scioto, Seneca, Wyandot.**

The above records bring the total to 88 counties, the first species to have been reported from every county in the state. This of course is no surprise and only reflects the fact that all the counties have now been investigated by a collector of Odonata. This species is truly ubiquitous. Rarely is it absent where any aquatic insect life can exist. A female of this species was taken with prey that appeared to be a teneral damselfly.

127 *Anomalagrion hastatum* (Say) 1839.—**Athens†, Clermont, Hardin, Licking, Lorain, Morrow.**

TABLE 3

Number of species reported for Ohio counties

	Anisoptera	Zygoptera	Total		Anisoptera	Zygoptera	Total
Adams	14	11	25	Licking	30	29	59
Allen	10	9	19	Logan	32	31	63
Ashland	23	18	41	Lorain	11	9	20
Ashtabula	16	14	30	Lucas	26	22	48
Athens	13	10	23	Madison	13	14	27
Auglaize	14	14	28	Mahoning	9	17	26
Belmont	9	8	17	Marion	12	10	22
Brown	10	10	20	Medina	16	13	29
Butler	9	11	20	Meigs	12	9	21
Carroll	8	8	16	Mercer	14	15	29
Champaign	24	24	48	Miami	14	16	30
Clark	9	12	21	Monroe	12	9	21
Clermont	11	12	23	Montgomery	5	17	22
Clinton	4	11	15	Morgan	15	8	23
Columbiana	18	13	31	Morrow	13	19	32
Coshocton	19	10	29	Muskingum	16	15	31
Crawford	11	9	20	Noble	7	4	11
Cuyahoga	17	18	35	Ottawa	30	18	48
Darke	6	16	22	Paulding	52	30	82
Defiance	42	27	69	Perry	14	7	21
Delaware	21	15	36	Pickaway	9	9	18
Erie	38	30	68	Pike	9	11	20
Fairfield	22	22	44	Portage	37	29	66
Fayette	6	11	17	Preble	10	11	21
Franklin	48	30	78	Putnam	18	13	31
Fulton	18	21	39	Richland	13	6	19
Gallia	12	10	22	Ross	8	9	17
Geauga	19	13	32	Sandusky	10	13	23
Greene	16	17	33	Scioto	12	8	20
Guernsey	14	11	25	Seneca	8	6	14
Hamilton	20	6	26	Shelby	14	15	29
Hancock	8	8	16	Stark	8	12	20
Hardin	12	9	21	Summit	23	16	39
Harrison	15	10	25	Trumbull	7	12	19
Henry	15	13	28	Tuscarawas	12	11	23
Highland	10	8	18	Union	7	12	19
Hocking	25	14	39	Van Wert	13	9	22
Holmes	12	10	22	Vinton	22	15	37
Huron	12	10	22	Warren	13	12	25
Jackson	14	10	24	Washington	5	4	9
Jefferson	16	10	26	Wayne	21	15	36
Knox	24	18	42	Williams	62	39	101
Lake	12	13	25	Wood	8	11	19
Lawrence	11	10	21	Wyandot	10	7	17

TABLE 4

Species of Odonata reported from Ohio

Anisoptera				Zygoptera	
1	*Tachopteryx thoreyi*	128	*Macromia pacifica*	85	*Agrion aequabile*
2	*Progomphus obscurus*	45	*Macromia taeniolata*	86	*Agrion angustipenne*
3	*Hagenius brevistylus*	135	*Macromia wabashensis*	87	*Agrion maculatum*
4	*Ophiogomphus rupinsulensis*	46	*Didymops transversa*	88	*Hetaerina americana*
5	*Erpetogomphus designatus*	47	*Neurocordulia obsoleta*	89	*Hetaerina titia*
6	*Gomphus abbreviatus*	48	*Neurocordulia yamaskanensis*	90	*Archilestes grandis*
7	*Gomphus amnicola*	49	*Epicordulia princeps*	91	*Lestes congener*
8	*Gomphus crassus*	50	*Tetragoneuria cynosura*	92	*Lestes disjunctus* [*s.l.*]
9	*Gomphus exilis*	145	*Helocordulia uhleri*	92a	*Lestes d. australis*
138	*Gomphus externus*	134	*Somatochlora ensigera*	92b	*Lestes d. disjunctus*
10	*Gomphus fraternus*	51	*Somatochlora hineana*	97	*Lestes dryas*
11	*Gomphus furcifer*	133	*Somatochlora linearis*	93	*Lestes eurinus*
12	*Gomphus graslinellus*	52	*Somatochlora tenebrosa*	94	*Lestes forcipatus*
136	*Gomphus laurae*	132	*Dorocordulia libera*	95	*Lestes inequalis*
13	*Gomphus lineatifrons*	53	*Nannothemis bella*	96	*Lestes rectangularis*
14	*Gomphus lividus*	54	*Perithemis tenera*	98	*Lestes unguiculatus*
15	*Gomphus notatus*	55	*Celithemis elisa*	99	*Lestes vigilax*
16	*Gomphus plagiatus*	56	*Celithemis eponina*	100	*Argia apicalis*
17	*Gomphus quadricolor*	57	*Celithemis monomelaena*	101	*Argia bipunctulata*
18	*Gomphus spicatus*	58	*Erythrodiplax minuscula*	130	*Argia fumipennis*
19	*Gomphus spiniceps*	59	*Erythrodiplax umbrata*	102	*Argia moesta*
20	*Gomphus vastus*	60	*Ladona julia*	103	*Argia sedula*
21	*Gomphus ventricosus*	61	*Libellula auripennis*	104	*Argia tibialis*
22	*Gomphus villosipes*	62	*Libellula cyanea*	146	*Argia translata*
23	*Gomphus viridifrons*	63	*Libellula incesta*	105	*Argia violacea*
24	*Dromogomphus spinosus*	64	*Libellula luctuosa*	106	*Amphiagrion saucium*
25	*Dromogomphus spoliatus*	66	*Libellula pulchella*	107	*Nehalennia gracilis*
26	*Lanthus albistylus*	67	*Libellula quadrimaculata*	108	*Nehalennia irene*
27	*Gomphaeschna antilope*	68	*Libellula semifasciata*	109	*Chromagrion conditum*
28	*Basiaeschna janata*	69	*Libellula vibrans*	137	*Coenagrion resolutum*
29	*Boyeria grafiana*	(65)	*Plathemis lydia*	110	*Enallagma antennatum*
30	*Boyeria vinosa*	70	*Sympetrum ambiguum*	111	*Enallagma aspersum*
31	*Anax junius*	144	*Sympetrum costiferum*	129	*Enallagma basidens*
32	*Anax longipes*	143	*Sympetrum internum*	112	*Enallagma boreale*
131	*Coryphaeschna (ingens?)*	72	*Sympetrum obtrusum*	113	*Enallagma carunculatum*
33	*Nasiaeschna pentacantha*	73	*Sympetrum rubicundulum*	114	*Enallagma civile*
34	*Epiaeschna heros*	74	*Sympetrum semicinctum*	140	*Enallagma cyathigerum*
141	*Aeshna canadensis*	75	*Sympetrum verum*	115	*Enallagma divagans*
35	*Aeshna clepsydra*	76	*Sympetrum vicinum*	116	*Enallagma doubledayi*
36	*Aeshna constricta*	(71)	*Tarnetrum corruptum*	117	*Enallagma ebrium*
142	*Aeshna interrupta*	77	*Leucorrhinia intacta*	118	*Enallagma exsulans*
37	*Aeshna mutata*	78	*Pachydiplax longipennis*	119	*Enallagma geminatum*
38	*Aeshna umbrosa*	79	*Erythemis simplicicollis*	120	*Enallagma hageni*
39	*Aeshna verticalis*	80	*Pantala flavescens*	121	*Enallagma signatum*
40	*Cordulegaster diastatops*	81	*Pantala hymenea*	122	*Enallagma traviatum*
41	*Cordulegaster erroneus*	82	*Tramea carolina*	123	*Enallagma vesperum*
42	*Cordulegaster maculatus*	83	*Tramea lacerata*	124	*Ischnura posita*
43	*Cordulegaster obliquus*	84	*Tramea onusta*	125	*Ischnura prognatha*
139	*Macromia alleghaniensis*			126	*Ischnura verticalis*
44	*Macromia illinoiensis*			127	*Anomalagrion hastatum*

SUMMATION OF ODONATA REPORTED FOR OHIO

In order that the Ohio list of Odonata may once again be brought together in one place, and in an attempt to encourage the publication of data significant in completing the knowledge of the Ohio fauna, the following materials have been prepared.

Space limitations prohibit the publication of a complete total list of county

records. Therefore, such records are indicated in two forms. Figure 2 attempts to illustrate graphically the total records for each county listed in table 3. The block areas are proportional; hence, one can quickly see the many extensive areas of the state needing further investigation.

Table 4 is not intended to be a checklist. Instead it is merely a summation of those species known to have been reported from the state. Though space does not permit indication of the author responsible for each record, all such references are included within the paper.

SUMMARY

Field investigations in 68 of the counties of Ohio have resulted in 597 new county records involving 66 species and the addition of *Argia translata* Hagen to the Odonta known to occur in Ohio. A review of the species reported for Ohio is given relative to the assignment of numbers for the state list. Data pertinent to the new records, including field observations of ecology and behavior, are given for 29 of the species. Tables and maps are included to illustrate the distribution of sites visited, frequency of reported records per county, and a list of the species reported for Ohio.

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